

WHAT ARE THE ECONOMIC AND SOCIAL IMPACTS OF THE MOBILE PHONE SECTOR IN DEVELOPING COUNTRIES?

The World Bank Group is the largest multilateral investor in ICTs in developing countries. Over the past five years, the Group has supported this sector in over 80 countries for a total amount of USD 3 billion. In this article, Christine Qiang, senior economist at the World Bank, makes a review of the strong impact of ICT on GDP growth, and insists on how important competition is for the sector to pursue its development.

# Mobile Telephony: A Transformational Tool for Growth and Development

*The past 15 years have brought an unprecedented increase in access to telephone services in developing countries. This growth has been driven primarily by wireless technologies. Mobile phones have made a bigger difference to the lives of more people, more quickly, than any previous technology. They have spread the fastest and have become the single most transformative tool for development. A recent World Bank study of 120 countries shows that for every 10 percentage point increase in the penetration of mobile phones, there is an increase in economic growth of 0.8 percentage points in developing countries. The growth impact of mobile telephony is substantially higher in developing countries than in developed ones.*

**By Christine Zhen-Wei Qiang, Lead Economist at the World Bank**

The past 15 years have brought an unprecedented increase in access to telephone services. This growth has been driven primarily by wireless technologies and the liberalization of telecommunications markets, which allowed for faster and cheaper rollout of mobile networks.

The total number of mobile phones in the world surpassed the number of fixed-line telephones in 2002; by the end of 2008, there were an estimated four billion mobile phones globally (Wireless Intelligence, 2008)<sup>1</sup>. The proportion of mobile phone subscriptions in developing countries increased from about 30% of the world total in 2000 to more than 50% in 2004 - and to almost 70% in 2007.

## Mobile spread: no longer a luxury

No technology has ever spread faster around the world (The Economist, 2008a). The introduction of competition in the mobile telephony market has often led to an immediate growth of mobile penetration (Figure 1). Countries that have taken decisive steps to establish independent regulators and foster competition have seen notable improvements in sector performance. In some cases, the announcement of a plan to issue a new license has been effective in triggering growth, encouraging the existing mobile phone operator to improve service, reduce prices, and increase market penetration before the new entrant started operations.

In recent years, steep price reductions (Figure 2), driven by technological advances, market growth, and increased competition, have contributed to the rapid expansion in mobile phone use in

many countries. Increased use of prepaid services allows mobile customers to make payments in small amounts instead of having to commit to fixed monthly subscriptions. For those who could not afford their own handsets, small loans were made available, mainly to the rural poor, to enable them to buy a mobile handset, an antenna and a large battery. This gave enterprising individuals an opportunity to rent phones to other villagers and charge for calls (The Economist, 2009). Furthermore, prepaid cards, often available in small denominations, enable even low-income consumers to have access to mobile communications, leading to higher penetration rates in poor and rural areas.

## The strong growth impact

In the past few years, several macroeconomic studies have suggested a link between mobile phones and economic growth (The Economist, 2009). Sridhar and Sridhar (2004) investigate the relationship between telecommunications and the economic growth using data from 28 developing countries. The study finds that there is a positive impact of fixed lines and a significant impact of mobile phone penetration on national output. The impact of telecommunications penetration on total output is found to be significantly higher for developing countries than for OECD countries.

Waverman *et alii* (2005) have found that mobile telephony has a positive and significant impact on economic growth. An extra 10 mobile phones per 100 people in a typical developing country added 0.6 percentage points of growth in GDP *per capita*, and this impact is about twice as large in developing countries than in developed ...

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Her main responsibilities include overseeing the World Bank's analytical work on ICT policies, economics, and impact analysis, as well as leading ICT operations and policy dialog in countries in Asia. She has published over 20 journal articles, book chapters, and reports on ICT and development, economic growth, and productivity. She holds a PhD in Economics and a M.S.E. in Computer Science and Engineering from the Johns Hopkins University.

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... countries. The results concur with the theory that mobile phones in less developed economies are playing the same crucial role that fixed telephony played in the richer economies in the 1970s and 1980s. Mobile phones substitute for fixed lines in poor countries, but complement fixed lines in rich countries, implying that they have a stronger growth impact in poor countries.

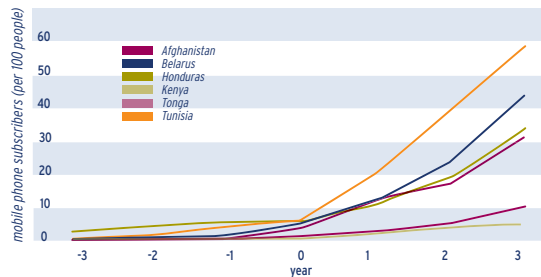
Lee *et alii* (2009) examine the effect of mobile phones on economic growth in Sub-Saharan Africa where a marked asymmetry has been observed between fixed line penetration and mobile telecommunications expansion (in favor of the latter). The findings show that mobile cellular phone expansion is an important determinant of the economic growth rate in Sub-Saharan Africa. The contribution of mobile cellular phones to economic growth has been growing in the region, and the marginal impact of mobile telecommunication services is even greater in areas where fixed-line phones are rare.

## Recent World Bank study

Recently, the World Bank conducted a new analysis to test the impact of telecommunications penetration on economic growth rates at country-level. According to this analysis of 120 countries, for every 10 percentage point increase in the penetration of mobile phones, there is an increase in economic growth of 0.81 percentage points in developing countries, *versus* 0.60 percentage points in developed countries (Qiang, 2009). This growth effect of the mobile phones is higher than that of fixed-line phones, but less than internet access or broadband (Figure 3).

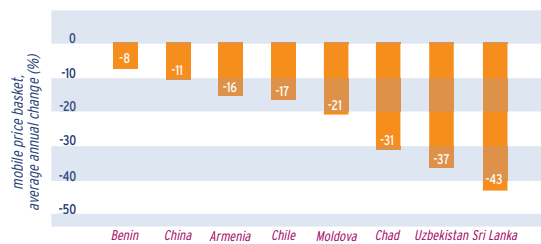
The study also found that all information and communications technologies promote growth more effectively in developing countries than in developed ones. This is because telecommunications services help improve the functioning of the markets, reduce transaction costs and increase productivity through better management in ...

**Figure 1 : Mobile telephony penetration before and after the introduction of competition**



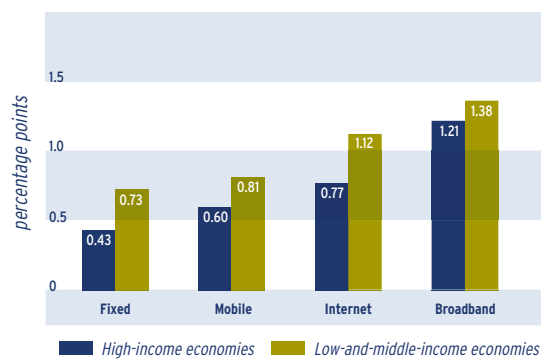
Year 0 indicates the year of entry of a second mobile operator.  
 Source: World Bank, 2009

**Figure 2 : Average annual change in price of mobile phone services in various countries, 2004-06**



Source: World Bank, 2009

**Figure 3 : Growth effects of information and communication technologies**



The y axis represents the percentage point increase in economic growth per 10 percentage point increase in telecommunications penetration.  
 Source: Qiang, 2009

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... both the public and private sectors. These issues were more acute in developing economies than in developed ones. Therefore, developing countries gain more by resolving some of them through better access to telecommunications (Qiang, 2009).

With the rapid development of wireless broadband, mobile communications are evolving from simple voice communication services and text messaging to a more sophisticated offering with a wide range of applications in locations where conventional services are not available. "Smart" wireless phones, for example, now allow users to also browse the Internet, download music, and access information services.

This opportunity is especially promising considering how inadequate infrastructure led the developing world to miss out on much of the initial web revolution (The Economist, 2008b), and that access to the Internet can provide an even bigger boost to economic growth than access to mobile phones (Qiang, 2009). Broadband Internet, wireless and fixed, is becoming a service of general economic interest—by enhancing the knowledge, skills, and networks of individuals; raising private sector productivity; and increasing community competitiveness. It also plays an essential role as an enabling technology in increasing investment payoffs in other sectors, transforming research and development, facilitating trade in services and globalization, and improving public services to enhance national business environment and competitiveness (Qiang and Rossotto, 2009). ●

<sup>1</sup> It is important, nevertheless, to note that the sale of 4 billion mobile phones worldwide implies far fewer than 4 billion individual users. The phenomenon of multiple mobile phone ownership is growing in many economies, including some in Africa. As evidence of this trend, penetration rates for mobile phones have risen to more than 100% in some markets. On the other hand, shared usage of mobile phones in rural areas of developing countries is also growing, suggesting that the footprint of mobile phone coverage is wider than for other ICT services.

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